



INTERNATIONAL AIR-CONDITIONING • HEATING • REFRIGERATING EXPOSITION

AHR EXPO

2012, January 23-25
McCormick Place North & South
Chicago, IL

Co-sponsors:



AIRI

The Visible Campus

Bringing Sustainable & Energy-Wise Designs to Focus

1:30 PM Tuesday, January 24th

David J. Branson, PE – Exec Vice
President

Compliance Services Group, Inc. (CSG)

- **Ken Sinclair** Publisher/Owner

www.AutomatedBuildings.com



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About

Welcome to Chicago AHRExpo

This Unique venue/arena supplied by International Exhibition allows us take our online service/magazine off line and Face 2 Face with you

4 Free Sessions on How to Make Sustainability and Energy Visible

The New Visibility & Interactions in the Building Automation Industry

9:00 am Monday

New Open Source Technologies that are Changing the Industry

1:30 pm Monday

The Tools of Visibility and Interaction

9:30 am Tuesday, January 24th

The Visible Campus – Bringing Sustainable & Energy-Wise Designs to Focus

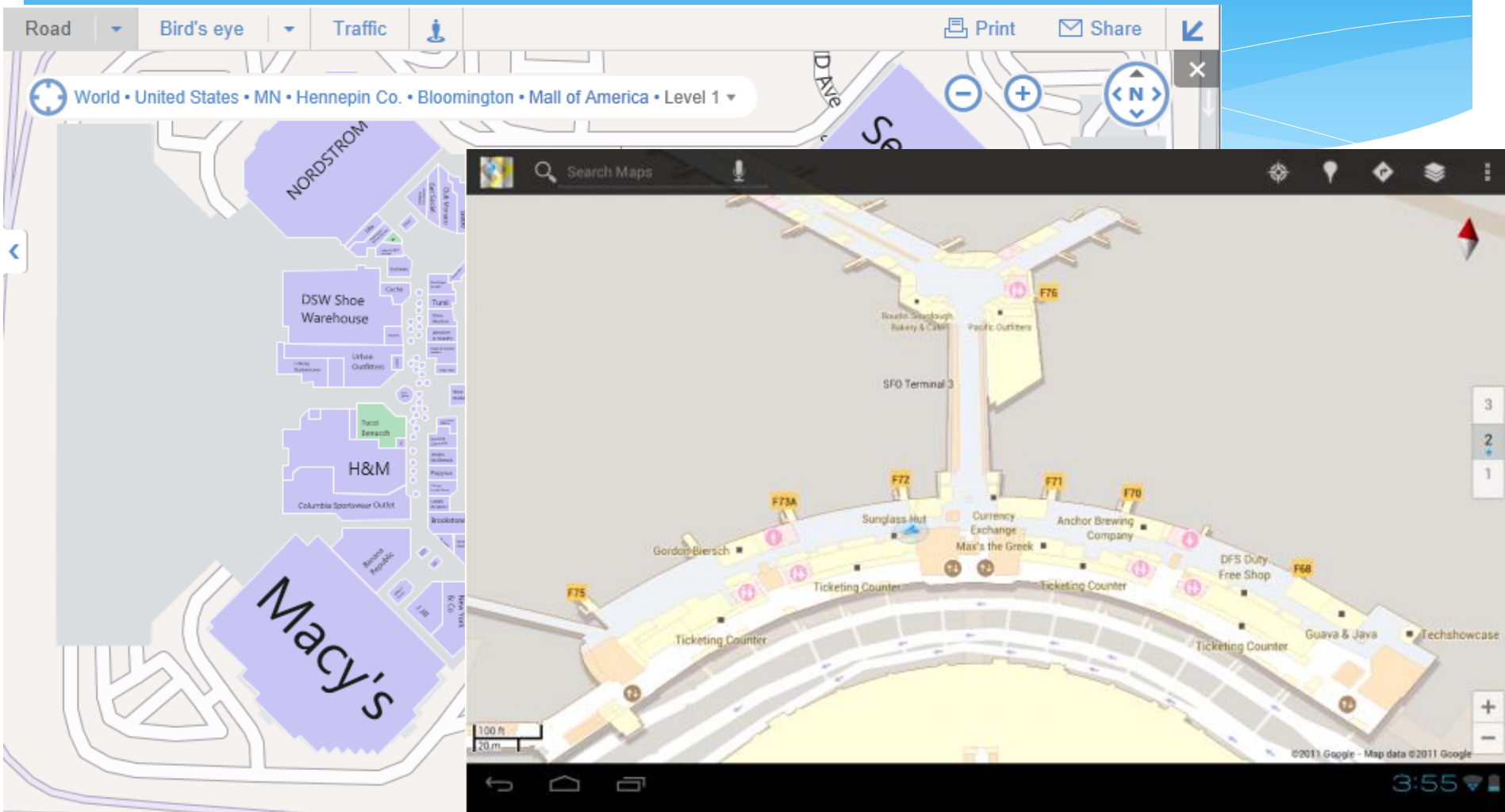
1:30 pm Tuesday, January 24th

New Visibility & Interactions

“Making the Invisible Visible” is about how we as an industry depict our invisible cornerstones of comfort, energy, and environmental impact.

How can we best show what cannot be seen: Temperature, Comfort, Electricity, Performance and their relationship to sustainability, and the necessary information and interaction to maintain all?

Google and Bing take street level to our level with evolving standards



The new Maps lets airport patrons navigate sites like San Francisco International from the inside. *Photo courtesy of Google*

Search the downtown campus map for:


Go


Join in!
Collaborate on
the map.


[Home](#) | [Get Directions](#) | [Building List](#) | [Other Maps](#) | [Campus Tours](#)


Layers Search Directions

University of Toronto Map *Beta!*


 Accessibility ▾


 Bicycle Racks ▾


 Food ▾


 Green U of T ▾

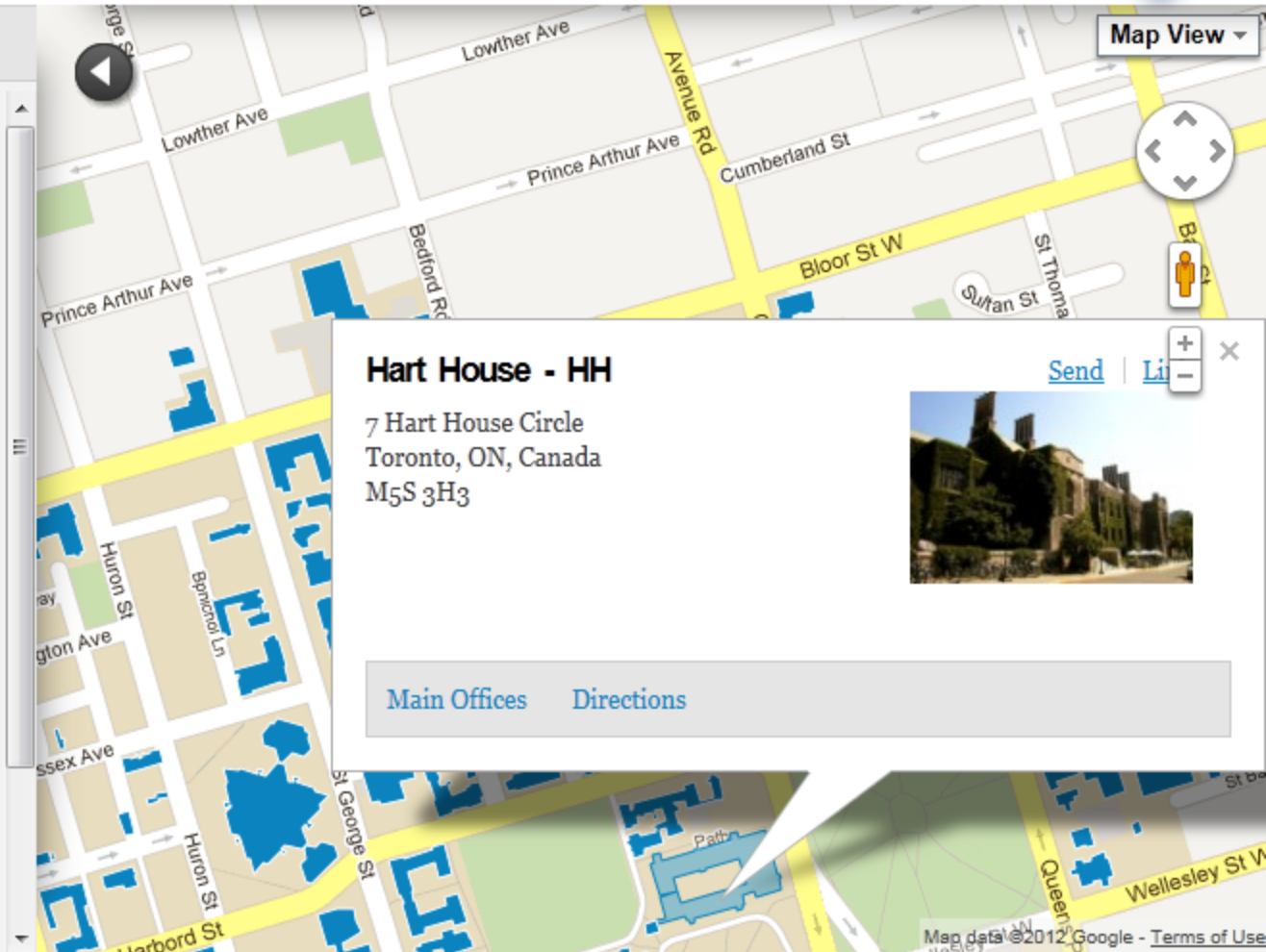
 Parking Lots

 Safety ▾

 Student Services ▾

 Student Spaces ▾

 TTC



Hart House - HH

7 Hart House Circle
Toronto, ON, Canada
M5S 3H3



[Main Offices](#) [Directions](#)

Buildings Becomes Mobile

Any Platform, Any Place, Any Time



Our palette also grows larger



emu.edu/begreen

Our mission

EMU educates students to serve and lead in a global context. Our Christian community challenges students to pursue their life calling through scholarly inquiry, artistic creation, guided practice, and life-changing cross-cultural encounter. We invite each person to follow Christ's call to

bear witness to faith,
serve with compassion,
and walk boldly in the way of
nonviolence and peace.

EMU envisions a learning community marked by academic excellence, creative process, professional competence, and passionate Christian faith, offering healing and hope in our diverse world. To this end, we commit ourselves to

"do justice,
love mercy, and
walk humbly with God." (Isaiah 60:1)

At EMU we believe the biblical call to "walk humbly" includes a call to walk humbly on the earth. Our mission to

 EASTERN
MENNONITE
UNIVERSITY

Graphics Convey a Message

Eco-Screen™

Facility Performance

DAYLIGHT HARVESTING ENERGY SAVINGS

COMPARISONS

EDUCATE

HOW IT WORKS

⏸ PAUSE THE ANIMATION

How does this effect power consumption?

VIEW MORE



63%
AMOUNT OF SUNLIGHT



HOME



GREEN
FEATURES



ELECTRICITY
USE



WATER USE



RAINWATER
COLLECTION



SOLAR POWER



WIND POWER



ENERGY AND
ENVIRONMENT



GEO THERMAL
SYSTEM



DEMAND
CONTROLLED



DAYLIGHT
HARVESTING



AIRSIDE
SYSTEM

Make the Invisible Visible



Connecting Communities speaks about the many new communities that building automation now is part of.



Automation Turns Green



Energy Information System (EIS)

ASU Home | ASU A-Z Index | My ASU | Colleges & Schools | Directory | Map |

ASU ARIZONA STATE UNIVERSITY

Search

CAMPUS METABOLISM

Home | Campus Map | Virtual Room | Select Building | Additional Info | Monday 9/27/2009 12:47 PM
Temp: 97.80°F Humidity: 12.87%

Campus Metabolism is an interactive web tool that displays real-time energy use on campus.

Electricity **1993.1** kW

Heating **1.77** mmBtu / hr

Cooling **1521.4** tons

Renewables **590** kW

Total currently being tracked on Campus Metabolism:
New: Renewable Energy Data

ASU greening mission & goals

Total Usage by Percentage:
Renewables not included in total, they reduce usage

Category	Percentage
Cooling	68%
Electricity	25%
Heating	7%

Click to Learn More

San Pablo Hall

Compare to other buildings | View campus map

Electricity **108.4** kW

Heating **0** mmBtu / hr

Cooling **20.7** tons

Units: Default kW mmBtu/hr tons
Stop random building display

Sustainability on Campus

News | Events

Congressional tour spotlights ASUs 'green'
Thu, 24 Sep 2009

ASUs commitment to sustainability education and innovation is attracting the interest of leaders across the nation, read more

Continue...

- Congressional tour spotlights ASUs 'green' effort
- Cheetah preservation inspires sustainable initial
- Professor wins 2009 Faculty Pioneer Award
- ASU praised for green efforts by national mags
- Pursuit of engineering Ph.D., aided by awards
- Engineering prof lauded as leading innovator
- Professor works toward safer nuclear options

Factoid: The Campus Metabolism is a collaborative project between many departments across the University.

©2009 Arizona State University | Questions, comments, problems? Contact us at: CampusMetabolism@asu.edu

APS energy services

Copyright & Trademark | Accessibility | Privacy | Emergency | Contact ASU |

The “Virtual Office” Energy Calculator

The screenshot displays the 'Virtual Office' Energy Calculator interface. At the top, the title 'CAMPUS METABOLISM' is shown with a heart rate line graphic. Below the title is a navigation bar with links for 'Home', 'Campus Map', 'Virtual Room', 'Select Building', and 'Additional Info'. The current date and time are 'Sunday 9/27/2009 1:29 PM', and the temperature and humidity are 'Temp: 100.34°F Humidity: 8.70%'. The main area shows a 3D rendering of an office desk with a computer. The 'Footprint: Office' is \$13.88, and the energy usage is 5/10. A color scale bar indicates energy usage levels. The ASU Greening logo is visible in the top left corner of the 3D view. A 'Computer' label with 'ON' status is overlaid on the computer monitor. At the bottom, a table provides details for the selected item:

Name:	Energy:	Status:
Desktop Computer	270 W	ON
Notes:	Usage:	Cost:
Turned off when employee finishes their work.	9 hrs. per day	\$7,873 mo.

Additional controls include 'HOME', 'LIST ALL', 'SOUND: OFF', 'LIGHTS OFF', and 'ALL ITEMS ON/OFF'. The footer contains copyright information for Arizona State University, contact information for CampusMetabolism@asu.edu, and the APS Energy Services logo.

3D Graphics



Creating Interactions

Wiki defines Interaction design very well -- "embedding information technology into the ambient social complexities of the physical world."



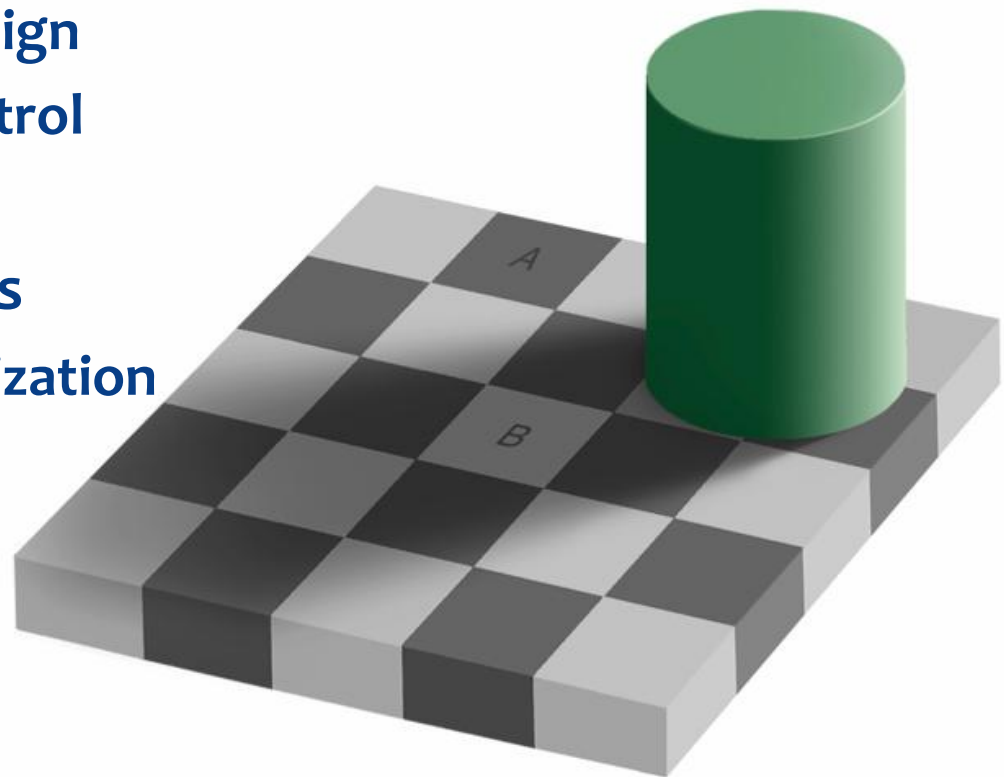
Psychology of Building Performance

Historical Methodologies

- Reinforcement by Design
- Limited Access to Control

Current Methodologies

- Performance Familiarization
- Increased Sensitivity



Performance Indicators

Building Energy -

Primary Energy Consumption

Renewable Energy Consumption

Water Use

Pollutant Emissions & Water Discharges

Greenhouse Emissions

Materials Use & Solid Waste

Percent Recycled

Related Issues

Building Utilization



Benchmarking



- ◆ Metering

- ◆ Tracking Energy Consumption

- ◆ Renewable Contribution

- ◆ Modeling

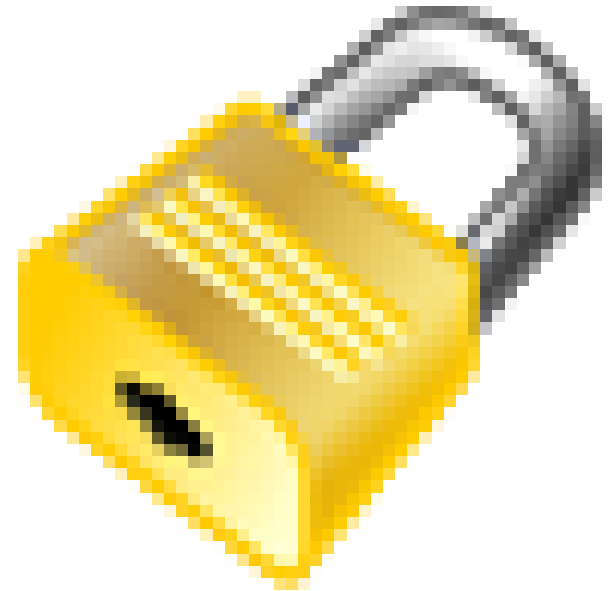
- ◆ Establishing Baseline Performance Metrics

- ◆ Simulating Building Performance

- ◆ Performance Rating

Revealing Performance

- * **Measurement & Verification**
- * **Continuous Commissioning**
- * **Monitoring & Reporting from BAS**
 - * **Building Dashboards**
 - * **Other Indicators**



Performance Reporting

- * **The Building Automation System**
 - * Real-Time Reporting
 - * Performance Icons
 - * Energy Dashboards
- * **Performance Comparisons**
 - * Current v Baseline
 - * Building v Campus
 - * Building v Similar Class



Campus Building Energy Performance

